CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 82-18

WATER RECLAMATION REQUIREMENTS FOR:

CITY OF PETALUMA, DAN SILACCI, CHARLES MATTERI,
HENRI CARDINAUX, JOSEPH MENDOZA, RALPH BETTINELLI,
AND MILTON TUNZI, SONOMA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Board) finds that:

1. The City of Petaluma (hereinafter Producer), and Dan Silacci, Charles Matteri, Henri Cardinaux, Joseph Mendoza, Ralph Bettinelli, and Milton Tunzi (hereinafter Users) have signed Reclaimed Wastewater Users Agreements and propose the following:

   a. A minimum of 550 acres of land will be irrigated with secondary treated wastewater and used to grow fodder, fiber, or seed crops. The location and size of areas to be irrigated are generally shown on attachment A, which is hereby made a part of this Order.

   b. Animals, including milking and non-milking cows and goats, will be pastured on land irrigated with wastewater.

   c. Sufficient storage and irrigation will be provided so that all the discharger's wastewater will be contained without discharge to State waters from May 1 through October 20 of each year.

   d. From October 21 through April 30, wastewater may be discharged to Petaluma River from the treatment plant's oxidation ponds.

2. The discharge from the treatment plant to Petaluma River from October 21 through April 30 is covered by a separate set of requirements adopted by the Regional Board under the National Pollutant Discharge Elimination System.

3. Section 13523 of the California Water Code provides that a Regional Board, after consulting with and receiving the recommendations of the State Department of Public Health, and if it determines such action to be necessary to protect the public health, safety, or welfare, shall prescribe water reclamation requirements for water which is used or proposed to be used as reclaimed water. The use of reclaimed water for the purposes specified in Finding 1 could affect the public health, safety, or welfare, and requirements for these uses are therefore necessary in accordance with the Water Code.

4. The Board adopted a Water Quality Control Plan for San Francisco Bay Basin in April 1975. The water quality objectives for reclaimed wastewater, as set forth in the Basin Plan, specify those limits prescribed in Title 17, Section 8025 through 8050, California Administrative Code. These objectives have been superseded by Title 22, Section 60301 - 60357, California Administrative Code.

5. Novato Sanitary District as lead agency for the Eastern Marin and Southern Sonoma Wastewater Agencies certified a final Environmental Impact Report (EIR) on September 17, 1979 for their wastewater management projects in accordance with the California Environmental Quality Act (Public Resoures Code, Section 2100 et seq.). The members of this Regional Board have received and reviewed a summary of these documents.

6. The EIR specifies that this project could have the following adverse impacts on the environment:

   a. Possible odors from the wastewater treatment plant may affect nearby residents;

   b. Mosquito and midge control are potential problems; and

   c. Degradation of soil is possible;

   d. Construction may possibly disrupt areas having archaeological significance;

   e. Irrigation spray could potentially disrupt the Petaluma Adobe Historic Park;

   f. Possible degradation of air quality as a result of increased population serviced by planned wastewater improvement projects;

   g. Energy usage is projected to increase at wastewater treatment plants and pumping stations; and

   h. Construction impacts may include dust, destruction of vegetation, traffic disruption and public safety hazards.

7. The Producer, on December 3, 1979, as a responsible agency, issued a "notice of determination" certifying that the Eastern Marin-Southern Sonoma EIR was complete.

8. The Producer, on August 17, 1981, certified as complete, a Final Subsequent Environmental Impact Report (EIR) on the proposed water reclamation project. This EIR included site specific impacts and proposed mitigation for the use of reclaimed water on the irrigation sites shown on Attachment A. The members of the Regional Board have received and reviewed a summary of this document.

9. The subsequent EIR specifies that this project could have the following additional adverse impacts on the environment:

   a. Degradation of localized ground water and local wells and springs.

   b. Pollution of surface water resulting from irrigation site runoff.

   c. Public contact with wastewater at storage or application sites.

   d. Public exposure to pathogens in wastewater through inhalation of contaminated aerosols resulting from spray irrigation.

10. The Producer and Users will design, construct and manage the treatment and irrigation facilities to mitigate adverse impacts of Findings 6.a. through 6.h, and 9.a. through 9.d.

11. The Producer, Vasco Brazil, Leroy Roche, Charles Matteri, Walter and Dan Silacci are presently governed by Regional Board Order No. 77-31 adopted on April 19, 1977.

12. This Regional Board has notified the Producer, the User, and interested agencies and persons of its intent to prescribe water reclamation requirements for the proposed uses.

13. This Board at a public meeting heard and considered all comments pertaining to this reuse.

IT IS HEREBY ORDERED, that the Producer and Users, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Reclaimed Water Quality Specifications

1. The Producer shall assure that reclaimed water is at all times an adequately disinfected, oxidized water that meets the following quality limits at all times:

5-day BOD	30 mg/l (30 day Avg) 60 mg/l (daily Max.)
Dissolved Oxygen	1.0 mg/l, minimum
Dissolved Sulfide	0.1 mg/l, maximum
Coliform Organisms	Median MPN shall not exceed twenty-three (23) coliform organisms per 100 milliliters of sample or 240 MPN/100 ml for any two consecutive samples at some point in the treatment process. The median value will be determined from the bacteriological results of the last seven (7) analyses.

2. The Producer shall discontinue the diversion of reclaimed water to the User during any period in which he has reason to believe the limits specified in A.1 are not being met.

B. Reclaimed Water Use Restrictions

The Users shall comply with the following restrictions for their use of reclaimed water:

1. Use of reclaimed wastewater under provisions of this Order shall be limited to irrigation of fodder, fiber and seed crops, and pasturing of non-milking and milking animals.

2. Areas with public access irrigated with reclaimed wastewater shall be fenced and clearly identified with posted notices to the public. The method and form of notification shall be subject to the review and approval of the Executive Officer.

3. Reclaimed wastewater shall be applied to use areas in a manner which will prevent direct public contact with the wastewater.

4. All equipment, including pumps, piping, valves, etc. with public access which may at any time contain waste shall be adequately and clearly identified with warning signs and the User shall make all necessary provisions, in addition, to inform the public that the liquid contained is sewage and is unfit for human consumption.

5. No reclaimed wastewater used for irrigation shall be allowed to cause saturated conditions to any area outside the disposal areas, either by surface flow or airborne spray. The disposal area shall be defined to mean the spray irrigation areas plus the ditch system draining the area.

6. Reclaimed water shall not be applied so as to cause saturated conditions within 100 feet of any flowing stream channels containing surface water, house, milking barn, or pond.

7. Reclaimed water shall not be used as a domestic or animal water supply.

8. Fodder, fiber, and seed crops shall not be harvested when wet from spraying with reclaimed water.

9. Surface drainage channels for the hillside areas irrigated with reclaimed water shall be dammed to prevent any runoff of reclaimed water from entering flowing stream channels containing surface water. All ponded (dammed) reclaimed water shall be disposed of properly, in accord with the restrictions, specifications and provisions of this Order.

10. If a use restriction should be violated, the irrigation with reclaimed wastewater shall be immediately terminated at the specific location and not resumed until all violations and conditions which would permit the violations to recur have been corrected.

C. Provisions

1. The treatment, distribution or reuse of reclaimed water shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. Unless written authorization permitting reclamation of wastewater on a specific field or defined area other than shown in Attachment A is received from this Board's Executive Officer, the Producer shall not supply such a use of wastewater.

3. Wastewater shall not impair ground water quality.

4. Ninety (90) days prior to initial commencement of wastewater reclamation on any use areas the Producer and Users shall submit to the Board (a) a list of users, indicating property owners (if different) and their addresses; (b) maps showing exact areas and fields to be irrigated; (c) the proposed use of the reclaimed water on each irrigation area; (d) maps showing locations of domestic and irrigation wells in, or adjacent to, the irrigation areas; and (e) a report (after consultation with the State and County Health Derpartments) that is satisfactory to the Executive Officer on how each well will be adequately protected.

5. This Order includes all items in "Requirements of Design for Reclamation Facilities" dated October 1, 1975, which is attachment B and hereby made a part of this Order.

6. The Producer and Users shall file with the Board technical reports on self-monitoring work performed according to detailed specifications as directed by the Executive Officer.

7. The Producer and Users shall permit the Board or its authorized representative in accordance with California Water Code Section 13267(c):

   a. Entry upon premises in which an effluent source is located or in which any required records are kept.

   b. Access to copy any records required to be kept under terms and conditions of this Order.

   c. Inspection of any monitoring equipment or method required by this Order.

d. Sampling of any discharge or reclaimed water.

8. The Producer and Users shall maintain in good working order and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the water reclamation requirements.

9. Board Order No. 77-31 is no longer applicable and is hereby rescinded.

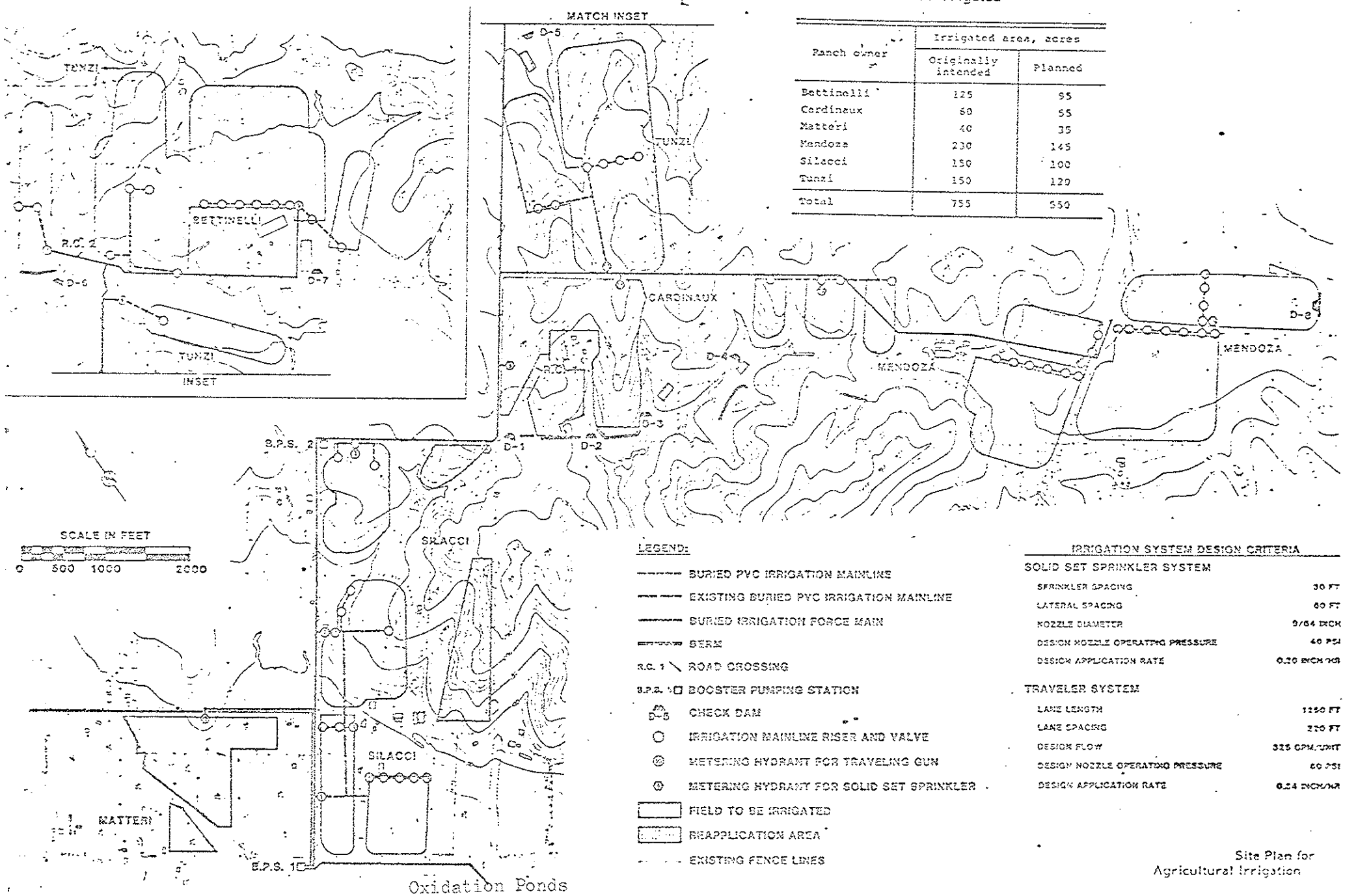
10. The Board will review this Order periodically and may revise the requirements when necessary.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 17, 1982.

FRED H. DIERKER
Executive Officer

Attachments:
A. Reclaimed Water Location Map
B. Requirements of Design for Reclamation Facilities dated 10/1/75

ATTACHMENT A - City of Petaluma Agricultural Water Reclamation Project



Agricultural Parcels to be Irrigated

Ranch owner	Irrigated area, acres	
	Originally intended	Planned
Bettinelli	125	95
Cardinaux	60	55
Matteri	40	35
Mendoza	230	145
Silacci	150	100
Tunzi	150	120
Total	755	550

LEGEND:

- BURIED PVC IRRIGATION MAINLINE
- EXISTING BURIED PVC IRRIGATION MAINLINE
- BURIED IRRIGATION FORCE MAIN
- BERM
- R.C. 1 — ROAD CROSSING
- B.P.S. 1 — BOOSTER PUMPING STATION
- CHECK DAM
- IRRIGATION MAINLINE RISER AND VALVE
- METERING HYDRANT FOR TRAVELING GUN
- METERING HYDRANT FOR SOLID SET SPRINKLER
- FIELD TO BE IRRIGATED
- RHAPPLICATION AREA
- EXISTING FENCE LINES

IRRIGATION SYSTEM DESIGN CRITERIA

SOLID SET SPRINKLER SYSTEM

SPRINKLER SPACING	30 FT
LATERAL SPACING	60 FT
NOZZLE DIAMETER	9/64 INCH
DESIGN NOZZLE OPERATING PRESSURE	40 PSI
DESIGN APPLICATION RATE	0.20 INCH/HR

TRAVELER SYSTEM

LANE LENGTH	1250 FT
LANE SPACING	220 FT
DESIGN FLOW	325 GPM/UNIT
DESIGN NOZZLE OPERATING PRESSURE	60 PSI
DESIGN APPLICATION RATE	0.24 INCH/HR

Site Plan for Agricultural Irrigation

ATTACHMENT B

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

OCTOBER 1, 1975

REQUIREMENTS OF DESIGN FOR RECLAMATION FACILITIES

1. Flexibility of Design. The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

2. Emergency Storage or Disposal. (a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devises, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process, and a manual reset to prevent automatic restart until the failure is corrected.

3. Primary Treatment. All primary treatment unit processes shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Standby primary treatment unit process.

(c) Long-term storage or disposal provisions.

4. Biological Treatment. All biological treatment unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

5. Secondary Sedimentation. All secondary sedimentation unit processes shall be provided with one of the following reliability features:

(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions.

6. Coagulation.

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

(1) Standby feeders,

(2) Adequate chemical stowage and conveyance facilities,

(3) Adequate reserve chemical supply, and

(4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

(1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provision, or

(5) Alarm and standby coagulation process.

7. Filtration. All filtration unit processes shall be provides with one of the following reliability features:

(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

(e) Alarm and standby filtration unit process.

8. Disinfection.

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

(1) Standby chlorine supply,

(2) Manifold systems to connect chlorine cylinders

(3) Chlorine scales, and

(4) Automatic devices for switching to full chlorine cylinders.

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

(1) Alarm and standby chlorinator;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions; or

(5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

9. All required alarm devices shall be independent of the normal power supply of the reclamation plant.

10. Other Alternatives to Reliability Requirements. Other alternatives to reliability requirements set forth above may be accepted if the applicant demonstrates to the satisfaction of the Regional Board that the proposed alternative will assure an equal degree of reliability.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

City of Petaluma, Dan Silacci, Charles Matteri, Henri Cardinaux, Joseph Mendoza, Ralph Bettinelli and Milton Tunzi, Sonoma County

NPDES NO. CA _____

ORDER NO. 82-18

CONSISTS OF

PART A

PART A

I. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as a self-monitoring program, are:

1. To document compliance with waste discharge requirements and prohibitions established by this Regional Board.

2. To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from a waste discharge.

II. DESCRIPTION OF SAMPLING STATIONS AND SCHEDULE OF SAMPLING, ANALYSIS AND OBSERVATIONS TO BE PERFORMED BY PRODUCER AND/OR USER

1. Reclaimed Water Quality Specifications

a. Coliform Organisms - Daily, during times when reclaimed water is being supplied for irrigation, a representative grab sample of the reclaimed water shall be analyzed for total coliform organisms and reported as MPN/100ml. The median value for the last seven (7) analyses shall be used to determine compliance with the 23 MPN/100ml requirement. Any single sample value of 240 MPN/100ml occurring for any two consecutive days shall also be reported as a violation.

b. The following Water Quality Parameters shall be grab sampled and analyzed as follows only during those times where reclaimed water is being supplied for irrigation:

Parameter	Frequency of Analysis
Chlorine Residual	Daily
BOD, 5-day	3 per week
Dissolved Oxygen	Daily
Dissolved Sulfide	Daily (if dissolved oxygen level is below 1 mg/l)
Settleable Solids	Monthly
pH	Monthly
Electrical Conductivity	Monthly
Sodium	Monthly

c. The reclaimed water shall be grab sampled and analyzed once per irrigation season for the following:

Parameter

Calcium
Magnesium
Bicarbonates
Carbonates
Nitrogen (all forms)
Phosphorus (total)
Potassium
Boron
Cadmium
Copper
Lead
Zinc
Sodium Adsorption Ratio

d. Pond system integrity shall be visually checked once per month during the times when reclaimed water is being supplied for irrigation for the following items:

i. Cleanliness of inlet and outlet structures,
ii. Scum or trash on pond surface,
iii. Pond berm erosion,
iv. Signs of burrowing animals in pond berms, and
v. Seepage from the storage ponds. Any observed standing water which is believed to be seeping from the ponds shall be analyzed for Total Coliform, Fecal Coliform, Fecal Strepptococci, and electrical conductivity.

2. Reclaimed Water Use Restrictions

Each day, for each reclaimed water User, and during actual irrigation, the following shall be recorded after inspection by either the Producer or User:

a. The specific "runs" irrigated, type of equipment used and hours of irrigation.

b. Location and extent of any spray transport outside the setback areas, including spray transport outside property lines.

c. Location and extent of any runoff to check dams, stream channels containing surface water, or offsite.

d. Location and source of any odors of sewage origin.

e. Wind speed (time and location). The wind monitoring program shall be approved in advance by the Board's Executive Officer. This program should be prepared in consultation with State and County Health Departments.

3. Groundwater and Surface Water

a. Prior to the initial application of reclaimed water, a background water quality sampling program shall be conducted, for each water supply well, groundwater monitoring well, spring and livestock reservoir identified in Figure 1. Background grab samples shall consist of the following parameters, sampled quarterly for at least one year prior to irrigation:

Parameter

Nitrate Nitrogen
Ammonia Nitrogen
Organic Nitrogen
Arsenic
Barium
Cadmium
Lead
Mercury
Selenium
Silver
Fluoride
Turbidity
Total Coliform Organisms
Fecal Coliform Organisms

b. Each year, all water supply wells, groundwater monitoring wells, springs and livestock reservoirs identified in Figure 1 shall be sampled once before, once during, and once after the irrigation season for the following:

Parameter[1)]

Nitrate Nitrogen
Ammonia Nitrogen
Organic Nitrogen
Total Coliform Organisms
Fecal Coliform Organisms
Turbidity

1) Note: Should sampling, under Section II.1.c. reveal constituents of concern to beneficial uses, this program will be amended to provide such added sampling.

c. For each well, the groundwater elevations shall be recorded monthly during the irrigation season.

d. For each spring, the appoximate flow shall be recorded monthly.

4. The Producer and User shall identify and report monthly the quantity of reclaimed water delivered to each User each day, and the specific use of the reclaimed water.

III. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the Producer or User are unable to comply with the conditions of the water reclamation requirements and prohibitions due to:

(a) Maintenance work, failure of mechanical equipment, or

(b) Accidents caused by human error or negligence, or

(c) Other causes, such as acts of nature,

the Producer and Users shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

2. Self-Monitoring Reports

Written reports shall be filed with the Regional Board on the 15th of every month. The reports shall specifically cover each point in the monitoring program. Any violations shall be clearly identified, and actions taken or planned for correcting violations shall be included. Monitoring reports shall be signed by the City Manager or his duly authorized representative, if such representative is responsible for the overall operation of the project from which the discharge originates.

The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

3. Annual Report

An annual report summarizing the use of reclaimed water for each User shall be submitted to the Regional Board from the Producer by December 1 of each year. This report shall contain a summary and analysis of the water quality data from the pond system, as well as the surface and groundwater. The report shall also contain a list of all violations of requirements and complaints received in the previous season. All violation and complaint investigative reports shall be included with this annual report.

I, Fred H. Dierker, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 82-18.

2. Is effective on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger and revisions will be ordered by the Executive Officer.

FRED H. DIERKER
Executive Officer

Effective Date 9/27/83

Attachment: Figure 1 - Map of Sampling Stations

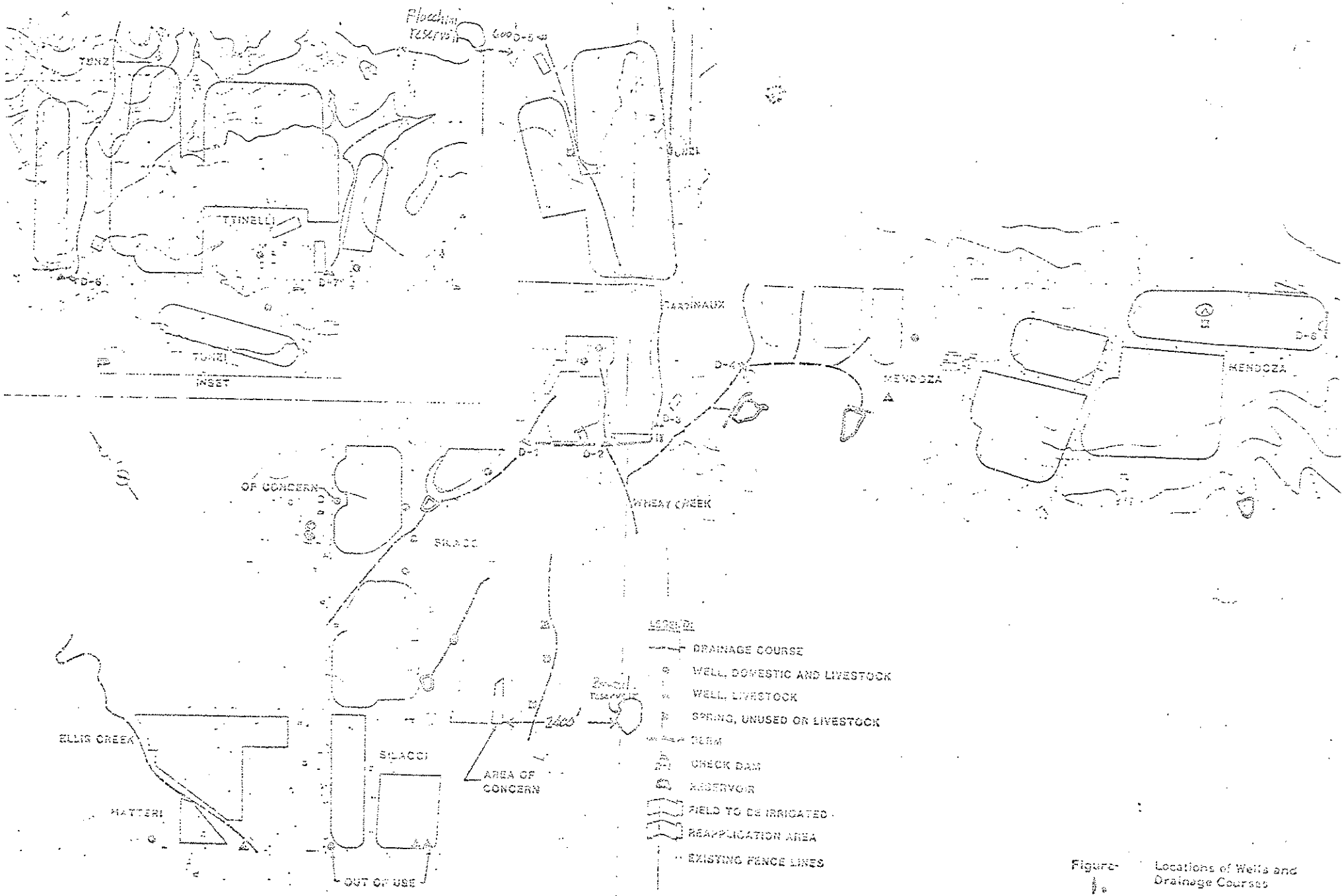


Figure 1. Locations of Wells and Drainage Courses